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10/522,483	10/24/2005	Michael Mohrmann	FI-54PCT	3845

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EXAMINER	
HUTCHINS, CATHLEEN R	

ART UNIT	PAPER NUMBER
3609	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/522,483	MOHRMANN, MICHAEL	
	Examiner	Art Unit	
	Cathleen R. Hutchins	3609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/24/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. PCT/EP03/07810, filed on 7/18/2003.

Specification

2. The abstract of the disclosure is objected to because misspelled drill head, as ear head. Correction is required. See MPEP § 608.01(b).

3. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

Claim Objections

4. Claims 1, 9, 11, 14, and 19 objected to because of the following informalities: For claims 1, 11, and 14, axis (8) should be axis (B) to appropriately correspond to the drawings. For claims 9 and 19, grammar needs to be corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1, 3, and 5-13 rejected under 35 U.S.C. 102(b) as being anticipated by Kamp, US4492276, granted 1/8/1985.

a. In regards to claim 1, Kamp teaches

A device for driving boreholes in the ground (Title), having a rotationally driven main shaft (Fig 1 connecting rod [4]) comprising a shaft journal (Fig 1 output shaft [5]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1 [A]), and having a drill head which is mounted such that it can rotate about the axis of the shaft journal (Fig 1 bit [12]) and has a circumferential region (Fig 1 [5]) which runs on a complementary circumferential region (Fig 1 [21]), wherein the complementary circumferential region can be set rotating (Abstract)

b. In regards to claim 3, Kamp also teaches

The complementary circumferential region is formed by a hollow wheel (Fig 1 [21] is shaped as a hollow wheel) arranged concentrically with respect to the axis of the main shaft.

c. In regards to claim 5, Kamp also teaches

The complementary circumferential region can be set rotating by means of a separate drive independently of the main shaft (Abstract).

d. In regards to Claim 6, Kamp also teaches

The separate drive can be controlled or regulated (Abstract).

e. In regards to claim 7, Kamp also teaches

Means provided using which the advance of the drill can be set rotating (Col 4 lines 65-68 to Col 5 lines 1-3, in which the drill is capable of being rotated as a function of the output of the rotary drive) as a function of the output of the rotary drive of the main shaft.

f. In regards to claim 8, Kamp also teaches

The input drive can be controlled or regulated (Col 5 line 2-3, in which control comes from adjusting the pressure of the drilling liquid that actuates the motor).

g. In regards the claim 9, Kamp also teaches

Means provided using which the advance of the drill can be controlled or regulated (Col 4 lines 65-68 to Col 5 lines 1-3) as a function of the output of the rotary drive of the main shaft.

h. In regards to claim 10, Kamp also teaches

The drill is advanced and the main shaft is driven in rotation using a hydraulic medium (Col 2 line 11-13), wherein means are provided which control or regulate the hydraulic pressures (Col 5 line 2-3) for effecting the advance of the drill and for driving the main shaft in rotation.

i. In regards to claim 11, Kamp also teaches

The drill head is of multipart design (Col 3 line 21-23) such that the part of the drill head subjected to wear can be separated from the part of the drill head that causes the drill head to bear on the shaft journal.

j. In regards to claim 12, Kamp also teaches

The drill head comprises a central bearing part (Fig 1 [11]) and a tool part fastened detachably thereto (Fig 1 [12]).

k. In regards to claim 13, Kamp also teaches

The tool part is fastened to the bearing part by means of screws uniformly distributed over a pitch circle (Col 3 line 21-23).

7. Claims 1, 2, and 4 rejected under 35 U.S.C. 102(b) as being anticipated by Bechem, et al., US4796713, granted 1/10/1989.

a. In regards to claim 1, Bechem, et al. teaches

A device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 6 primary drive shaft [50]) comprising a shaft journal (Fig 6 secondary drive shaft [50]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 6, showing angle between [50] and [52]), and having a drill head (Fig 5 rock cutter [16]) which is mounted such that it can rotate about the axis of the shaft journal (Fig 6 rotating on bearings [58], and see Col 3 lines 40-45) and has a circumferential region which runs on a complementary circumferential region (Col 3 line 46-49), wherein the complementary circumferential region can be set rotating (Col 3 line 46-48).

b. In regards to claim 2, Bechem, et al. also teaches

The circumferential region has an external tooth system (Col 3 line 52-55, where gear and pinion systems have external and internal teeth, respectively) and the complementary circumferential region has an internal tooth system (Col 3 line 52-55).

c. In regards to claim 4, Bechem, et al. also teaches

The complementary circumferential region can be set rotating by means of a planet gear mechanism in engagement with the main shaft (Fig 6 [60] and [66] equivalent to a planet gear mechanism).

8. Claims 1, 3, 4, and 11-14 rejected under 35 U.S.C. 102(b) as being anticipated by Sugden, US6561590, PCT published 10/8/2000.

a. In regards to claim 1, Sugden teaches

A device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Abstract) comprising a shaft journal (Fig 1 [55]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1 angle alpha between [A] and [B]), and having a drill head (Fig 1 [18]) which is mounted such that it can rotate about the axis of the shaft journal (Fig 1 rotary disc cutter [12] is capable of rotating about the axis [B]) and has a circumferential region which runs on a complementary circumferential region (Fig 1 bearings [39]), wherein the complementary circumferential region can be set rotating (Fig 1 bearings [39] can be set rotating).

b. In regards to claim 3, Sugden also teaches

The complementary circumferential region is formed by a hollow wheel arranged concentrically with respect to the axis of the main shaft (Fig 1 bearings [39]).

c. In regards to Claim 4, Sugden also teaches

The complementary circumferential region can be set rotating by means of a planet gear mechanism in engagement with the main shaft (Fig 7 gear arrangement [616], also see Col 7 line 30-35).

d. In regards to claim 11, Sugden also teaches

The drill head is of multipart design such that the part of the drill head subjected to wear can be separated from the part of the drill head that causes the drill head to bear on the shaft journal (Col 5 line 16-18)

e. In regards to Claim 12, Sugden also teaches

The drill head comprises a central bearing part (Fig 1 [39]) and a tool part fastened detachably thereto (Fig 1 [35] attached via [37])

f. In regards to Claim 13, Sugden also teaches

The tool part is fastened to the bearing part by means of screws uniformly distributed over a pitch circle (Fig 1 screws [37]).

g. In regards to claim 14, Sugden also teaches

The device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 1 shaft [55]) comprising a shaft journal whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1 angle alpha between [A] and [B]), and having a drill head working in a drill space (Fig 1 showing drill space below drill head), which is mounted such that is can rotate

about the axis of the shaft journal (Fig 1 [12] mounted to [55]) and has a circumferential region (Fig 1 wall [41]) which runs on a complementary circumferential region (Fig 1 bearings [39]), in particular as claimed in Claim 1 (see claim 1 rejection), wherein a sealing arrangement (Fig 1 seal [45]) is provided which at least substantially seals the bearing arrangement relative to the drill head space

9. Claim 1-4, and 14-16 rejected under 35 U.S.C. 102(b) as being anticipated by Leroy, US5836407, granted 11/17/1998.

a. In regards to Claim 1, Leroy teaches

A device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 1 hollow shaft [1]) comprising a shaft journal (Fig 1 attached to [10]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1, showing angle between the center lines), and having a drill head (Fig 1 attached to [22]) which is mounted such that it can rotate about the axis of the shaft journal (Fig 1, can rotate around axis) and has a circumferential region (Fig 1 [10]) which runs on a complementary circumferential region (Fig 1 [6]), wherein the complementary circumferential region can be set rotating (Fig 1 [6] can rotate).

b. In regards to Claim 2, Leroy also teaches

The circumferential region has an external tooth system (Fig 1 external rounded teeth [9]) and the complementary circumferential region has an internal tooth system (Fig 1 internal spur teeth [7]).

c. In regards to Claim 3, Leroy also teaches

The complementary circumferential region is formed by a hollow wheel arranged concentrically with respect to the axis of the main shaft (Fig 1 sleeve [6] is an elongated hollow wheel).

d. In regards to Claim 4, Leroy also teaches

The complementary circumferential region can be set rotating by means of a planet gear mechanism (Fig 1 teeth [9] and [7] form a planet gear mechanism) in engagement with the main shaft (Fig 1 showing [10] attached to [1]).

e. In regards to Claim 14, Leroy also teaches

The device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 1 hollow shaft [1]) comprising a shaft journal (Fig 1 attached to [10]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1 angle between center lines), and having a drill head working in a drill space (Fig 1 showing drill head space below the bit [22]), which is mounted such that is can rotate about the axis of the shaft journal (Fig 1 rotates via bearings [20] and [21]) and has a circumferential region (Fig 1 [10]) which runs on a complementary circumferential region (Fig 1 [6]), in particular as claimed in Claim 1, wherein a sealing arrangement is provided which at least substantially seals the bearing arrangement relative to the drill head space (Fig 1 membranes [15] and [16]).

f. In regards to Claim 15, Leroy also teaches

The sealing arrangement comprises an elastic bellows (Fig 1 sealing arrangement [15]).

g. In regards to Claim 16, Leroy also teaches

The sealing arrangement comprises a sliding ring seal (Fig 1 membrane [16] is ring shaped, and can slide).

10. Claims 1, 14, 16, 17, 18, 21, and 22 rejected under 35 U.S.C. 102(e) as being anticipated by Rives, PG Pub 2004/0200640, published 10/14/2004, claiming a provisional application filed on 4/14/2003.

a. In regards to Claim 1, Rives teaches

A device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 1 [DS]) comprising a shaft journal (Fig 1 journal [20]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1, line near [49] at an angle with line near [14]), and having a drill head (Fig 1 [80]) which is mounted such that it can rotate about the axis of the shaft journal (Fig 1, rotates via retainer bearings [50]) and has a circumferential region (Fig 1 [20]) which runs on a complementary circumferential region (Fig 1 [70]), wherein the complementary circumferential region can be set rotating (Fig 1, showing [DS] which rotates [70] via rotating [F] direction).

b. In regards to Claim 14, Rives also teaches

The device for driving boreholes in the ground (Abstract), having a rotationally driven main shaft (Fig 1 [DS]) comprising a shaft journal (Fig 1 journal [20]) whose axis forms an acute angle with respect to the axis of the main shaft (Fig 1

line near [49] and line near [14]), and having a drill head (Fig 1 [80]) working in a drill space (Fig 1 bore face [BF]), which is mounted such that is can rotate about the axis of the shaft journal (Fig 1, [12] rotates on angle [A]) and has a circumferential region (Fig 1 [5]) which runs on a complementary circumferential region (Fig 1 [21]), in particular as claimed in Claim 1 (see claim 1 rejection), wherein a sealing arrangement is provided which at least substantially seals the bearing arrangement relative to the drill head space (Fig 1 o-ring [21]).

c. In regards to Claim 16, Rives also teaches

The sealing arrangement comprises a sliding ring seal (Fig 1 o-ring [21]).

d. In regards to Claim 17, Rives also teaches

The device for driving boreholes in the ground (Abstract), having a rotationally driven drill head (Fig 1 [80]) working in a drill head space (Fig 1 [BF]) and carrying out a wobbling movement (Abstract, wherein nutating is equivalent to wobbling) in addition to the rotary movement, and having a conveying line (Fig 1 [14], capable of transporting detached drilled material from drill head space) which leads into the drill head space by way of its receiving end and is intended for transporting away detached drilled material from the drill head space, in particular as claimed in Claim 1, wherein the drill head and the receiving end of the conveying line are designed in such a way that drilled material situated prior to the receiving end is mechanically transported into the conveying line by reason of the wobbling movement of the drill head

e. In regards to Claim 18, Rives also teaches

The drill head has, on its side remote from the rock face, at least one continuation (Fig 1, wherein [80] extends past end of [15]), which at least virtually penetrates the receiving end of the conveying line by virtue of the wobbling movement.

f. In regards to claim 21, Rives also teaches

The receiving end is of partially annular design in cross section (Fig 1 [14] annular cross section)

g. In regards to Claim 22, Rives also teaches

Means for blowing conveying air into the drill head space are provided (Paragraph [0015] fluid thru [14]).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Rives, PG Pub 2004/020640 as applied to claims 1 and 17 above, and further in view of Haspert, et al., US3355215, granted 11/28/1967.

a. Rives teaches all of the elements in claims 1 and 17, but does not teach the further limiting elements in Claims 19 and 20.

b. In regards to Claim 19, Haspert, et al. teaches

Means for reducing the size at least of large pieces of drilled material are provided in the region adjoining the receiving end of the conveying line (Fig 3 [118]). It would have been obvious to a person of ordinary skill in the art at the time of the present invention to modify Rives in view of Haspert, in order to achieve the predictable result of breaking large pieces of drilled material into smaller pieces in order to more easily transport the removed material thru the conveying line of the drill (This motivation taken in light of Supreme Court Decision in KSR International v. Teleflex Inc., 550 US- 82 USPQ2d 1385 (2007)).

c. In regards to Claim 20, Haspert, et al. teaches

The means intended for reducing the size comprise breaker ribs extending transversely in the cross section of the conveying line (Fig 3 [118], where the ends of the two helical threads form breaker ribs which extend transversely across the opening of the conveying line). It would have been obvious to a person of ordinary skill in the art at the time of the present invention to modify Rives in view of Haspert, in order to achieve the predictable result of using transversely positioned breaker ribs along the cross section of the conveying line

in breaking large pieces of drilled material into smaller pieces in order to more easily transport the removed material thru the conveying line of the drill (This motivation taken in light of Supreme Court Decision in KSR International v. Teleflex Inc., 550 US- 82 USPQ2d 1385 (2007)).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, is listed below:

a. Hughes, et al., US4682661 granted 7/28/1987, teaches elements in Claims 19,20, 21, and 22. Hughes, et al. also teaches some of the elements in Claims 1, 3, 7, 8, 14, and 17.

b. Sletten, et al., US1154137 granted 9/21/1915, teaches elements in claims 18 and 19. Sletten, et al. also teach some of the elements in claims 1, 14, and 17.

c. Ebeling, et al., US4705120 granted 11/10/1987, teaches elements in claims 21 and 22. Ebeling, et al. also teach some of the elements in claim s1, 10, 14, and 17.

d. Steiginga, et al., US4880066 granted 11/14/1989, teach elements from claims 1, 18, and 21/ Steiginga, et al., also teach some of the elements from Claims 3, 14, and 17.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathleen R. Hutchins whose telephone number is (571)270-3651. The examiner can normally be reached on Mon thru Thurs 7:30-5, alternate Fri 7:30-4 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David V. Bruce can be reached on 571-272-2487. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CRH/
crh

DAVID BRUCE
SUPERVISORY PATENT EXAMINER